REMARKS

Claims 1-8 are pending in the application. The disclosure has been objected to due to certain informalities. Claims 1-7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hill et al. (US 5,990,218) in view of Yoden (US 5,062,904). Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hill et al. (US 5,990,218) in view of Yoden (US 5,062,904) and further in view of Salmasi (US 6,237,424 B1).

Objections to Disclosure: The examiner's objections contained on page 2 of the Detailed Action appear to be in error. The words "about", "perfluorooctanate" and "Toyo" are not contained anywhere in the instant 13 page application.

Claim Rejections – 35 U.S.C. 103(a): Decomposed elastomer material lost from the surface of an elastomer (i.e. thermoset polymer) part due to exposure of the part to reactive plasmas may contaminate silicon wafers being dry etched in semiconductor manufacturing equipment. Furthermore, plasma degraded elastomer surfaces may reduce the sealing performance of the part. Thus, it is important to protect the surfaces of elastomer parts from attack by reactive plasmas when seals are employed in such environments. Applicants have surprisingly discovered that a magnetic flux density of at least 10 gauss on the surface of an elastomer part helps to protect the part from the harmful effects of exposure to reactive plasma. As shown in Applicants' Examples, elastomer parts exposed to reactive plasmas lose weight, presumably due to decomposition of the elastomer. However, parts having at least a 10 gauss magnetic flux density at their surface lose significantly less weight than do similar parts that are not protected by a magnetic flux density.

Hill et al. ('218 patent) disclose magnetic polymer compositions that contain 5-19 parts by weight of a specific type of rubbery thermoplastic polymer (not a thermoset elastomer); 80-90 parts by weight of magnetic powder; and 1-10 parts by weight of an internal lubricant. These compositions are said to be useful in refrigerator and freezer magnetic door seals (col. 1, line 52 - col. 2, line 15). The '218 patent does not disclose exposure of the magnetic compositions to reactive plasmas.

Yoden ('904 patent) discloses means to improve the oxidation stability of ferromagnetic powders employed in magnetic recording media. This is accomplished by exposing ferromagnetic powder to a low temperature plasma in an oxygen atmosphere, thus forming a thin oxide layer on the surface of the ferromagnetic powder. This oxide layer protects the powder from further oxidation (col. 2, lines 41 – 52). The plasma treated

ferromagnetic powder may then be mixed with a binder resin to form a coating composition. The binder resin is not exposed to plasma. Yoder does not disclose a means for protecting the surfaces of elastomer polymer from plasma induced degradation.

The simple combination of the disclosures of the '218 patent and the '904 patent does not result in Applicants' claimed invention (claims 1-7), nor render it obvious. Applicants' invention is an elastomer part for exposure to reactive plasmas. The elastomer part has a surface that is protected from plasma induced decomposition by a surface magnetic flux density of at least 10 gauss. Such a part finds particular use in sealing slit valve doors (claim 7) that are exposed to reactive plasma.

Salmasi et al. ('424 patent) disclose an electromagnetic flow meter for measuring the flow of a fluid through a pipe. The meter comprises a flow measurement duct, a magnetic circuit for generating a magnetic filed across fluid flowing in the duct, an electrical circuit for measuring a voltage thereby induced in the fluid and for deriving a flow measurement therefrom (col. 1, line 66 – col. 2,line 4). Seals 20 are disposed between the flow tube 16 and meter body 12 at non-magnetic, non permeable flanges 18 (col. 6, lines 1-7). Also, seals 32 are disposed between each spud end 28 and the plastic meter body 12 (col. 7, lines 18-30). No magnets are mounted on flanges 18 or on flanged metal spud end 28. Instead, the magnetic field is generated from soft magnetic upper pole piece 42 which is not in contact with flanges 18 or 28 (col. 9, lines 40 – 42 and Figs 1, 2, and 5). The magnetic field is generated within measurement duct 26 (col. 9, lines 22 – 28) which is located intermediate between the two flanges 18 on non magnetic, nonconductive (i.e. plastic) flow tube 16 (col. 6, lines 8 – 18). The '424 patent does not disclose the possibility of the fluid traveling through the pipe being a reactive plasma that could attack seals 20 and 32. The only mention of "plasma" in the patent is as a means to apply an EMC/RFI shield to the plastic meter body 12 and cover 14 (col. 5, lines 59-62).

The simple combination of the disclosures of the '218 patent, the '904 patent and the '424 patent does not result in Applicants' claimed invention (as defined in claim 8), nor render it obvious. Applicants' invention is a pipe flange that is exposed to reactive plasma. The flange has an elastomer part and at least one magnet mounted thereon, said elastomer part having a surface that is protected from plasma induced decomposition by a surface magnetic flux density of at least 10 gauss.

In view of the above remarks, Applicants believe that the instant application is in condition for allowance. Reconsideration and such favorable action is requested.

Respectfully submitted,

GEORGE E. KIRVAN, JR.
PATENT AGENT FOR APPLICANTS
Registration No.: 36,187
Telephone: (302) 792-4268
Facsimile: (302) 792-4270

Dated: October 20, 2004